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21 March 1963

MEMORANDUM FOR THE RECORD

SUBJECT: Trip Report to Edwards Air Force Base, 13-15 March 1963

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1. General purpose of trip was to follow up observations and recommendations for [] modification resulting from LAC tests. Contact with [] (reference [] 2361-63) indicated availability of a 618 bench test mock-up at Edwards AFB. Verbal coordination with Communications validated possible test dates, and test arrangements were completed. The primary purposes of trip as indicated to Communications were:

a. To determine modified system performance to transients in 28 volt prime power supply.

b. To determine degradation of ground station read-out due to RFI.

c. To demonstrate acceptability of time sharing [] transmission such that receiver would not be continuously locked when [] is triggered.

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2. Prior to start of ground checks (i.e., bench checks), a general briefing on scope and status of [] was given to [] and []. This briefing was followed up at a later date with a general meeting and discussion on possible inputs to the system with section heads, pilots, operations personnel, etc. The general meeting was scheduled to obtain further experienced interpretation of aircraft flight conditions and flight functions. These inputs, both new and old, will be weighed to preclude any redundancy or inadequacy of information channels.

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3. In the LAC tests, it was noted in ground checks prior to flight test, that intermittent keying of [] transmitter was caused by fluctuations and transients in the ground power supply. Recommendation was made to lengthen circuit time constants to alleviate this condition. The unit checked at Edwards was modified. No problems were observed due to transient conditions in 28 volt supply.

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4. In trying to determine degradation of ground station read-out due to RFI, it was determined that isolation of the inputs to [] were not adequate to make a valid test. Because of poor isolation between transmitter and antenna which could not be corrected in the time available,

25X1 self inflicted RFI at the high level of transmitter output resulted in
25X1 garbled transmission. In the present system, this condition does not
25X1 exist when [] is properly installed in the aircraft. At this
25X1 point in the contrast, however, design procedures should be initiated
25X1 to alleviate problems which could upset standard maintenance practices.
25X1 HRB is setting up similar facilities at their plant to apply proper
25X1 isolation techniques to [] circuits and intercabling. This same
25X1 facility will be used to determine RFI levels for degradation of ground
25X1 stations information response.

25X1 5. Because of the frequency usage allocated to [] it was
25X1 suggested by [] and others, that multiple receiving sites be
25X1 made available at any given time to preclude black-out of a given site

25X1 []
25X1 variations and types of visual read-out devices can be utilized and will
25X1 be weighed in cooperation with Commo Staff people. It should also be
25X1 recognized that established procedures be followed in the assignment of
25X1 frequencies for those cases where multiple aircraft may be active in
25X1 the same time frame. Transmissions at these frequencies are not limited
25X1 to line-o-sight propagation.

25X1 6. The value of time sharing [] transmission under any
25X1 condition should not be underestimated. The concept of time sharing
25X1 met with approval from all personnel knowledgeable on [] opera-
25X1 tions. At the present time, a time sharing cycle of 0.6 seconds ON and
25X1 ten seconds OFF, looks most promising. From both security and infor-
25X1 mation aspects, it has been considered that automatic shut down of
25X1 [] should occur after one minute of operation unless new
25X1 failure appears which will retrigger [] for a complete new
25X1 cycle of operation. With this mode of operation, successive failures
25X1 in aircraft function will provide a continuous transmission of []
25X1 information. In the case, however, that only a single
25X1 functional failure triggers transmission, [] will shut down
25X1 without pilot over-ride if pilot can meet or operate around such
25X1 failure.

25X1 7. Recommendations which have been made to HRB for improvement
25X1 of the system include further attention to: (a) isolation and shielding
25X1 needs of [] its sensors, and its intercabling, (b) provide a
25X1 time sharing function under any condition which will allow the receiver
25X1 to remain open for an adjustable period of five to ten seconds, (c) to

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redesign the package for aircraft installation, and (d) to determine signal levels and characteristics which can degrade ground station information reception capability. The new package will be mounted on the forward side of 618 housing and will require a reduction in height of 1/2 inch. Other dimensions can be increased as required to allow for reduction in height.

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[Redacted]
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